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5 Underwood Court, Delran, New Jersey 08075-1229
609-461-4003 • 215-238-0338 • Fax 609-461-4916

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-WO-0036

MEMORANDUM

TO: Bob Guarni, OSC Region III
Enforcement Section

THRU: Mike Zickler, TATL, Region III *MZ*

FROM: Travis Helm and Kurt Wassersug, TAT Region III *TH* *KS*

SUBJECT: Toxicological Effects
United Chemical Company

DATE: June 30, 1994

INTRODUCTION

On June 30, 1994, OSC Guarni tasked members of the Roy F. Weston, Inc., Technical Assistance Team (TAT) to prepare a toxicological report for chemicals listed in Section 3.10 of the Administrative Order for Removal Response Action for United Chemical Technologies in Bristol, Bucks County, Pennsylvania. The following is a list of these chemicals and their associated toxicological effects.

CHEMICAL

TOXICITY EFFECTS

Bromine

Marked irritant to eyes, nose, throat, skin, bronchi and lungs. May cause acute lung damage, edema, and/or necrosis.
Symptoms: Dizziness, headache, lacrimation, epistaxis, coughing, pulmonary edema, pneumonia, abdominal pain, diarrhea, measles-like eruptions, severe burns of eyes and skin.
Target Organs: Respiratory system, eyes, central nervous system.

Chlorine

Marked irritant to eyes, nose, throat, skin, bronchi, and lungs. May cause acute lung damage and/or edema.
Symptoms: Burning of eyes, nose, mouth, and skin, lacrimation, rhinorrhea, coughing, choking, substernal pain, nausea, vomiting, headache, dizziness, syncope, pulmonary edema, pneumonia, hypoxemia, dermatitis.

Roy F. Weston, Inc.

MAJOR PROGRAMS DIVISION

In Association with Foster Wheeler USA Corporation, Resource Application
R.E. Sarriera Associates, and GRB Environmental Services, Inc.

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Target Organs: Respiratory system

Chloroform
(Trichloromethane)

Chronic/cumulative toxicity suspect carcinogen or mutagen. Chronic toxicity to organs in systems other than nervous, respiratory, hematologic, and/or reproductive systems.

Symptoms: dizziness, mental delusion, nausea, disorientation, headache, fatigue, anesthesia, hepatomegaly, irritation to eyes and skin.

Target Organs: Liver, kidneys, heart, eyes, skin.

Cyanide

Marked irritation to eyes, nose, throat, skin.

Symptoms: Asphyxia and death, weakness, headache, confusion, nausea, vomiting, increased rate of respiration, slow gasping respiration, irritation to eyes and skin.

Target organs: Cardiovascular system, central nervous system, liver, kidneys, skin.

Ethylene Oxide

Moderate irritation to eyes, nose, throat. Cumulative toxicity to lungs, liver and kidney damage. Suspect Mutagen. Chronic toxicity to organs in systems other than nervous, respiratory, hematologic, and/or reproductive.

Symptoms: Irritant to eyes, nose, and throat, peculiar taste, headache, nausea, vomiting, diarrhea, dyspnea, cyanosis, pulmonary edema, drowsiness, weakness, incoordination, EKG abnormalities, frostbite, In animals: convulsions, liver and kidney damage.

Target organs: Eyes, blood, respiratory system, liver, central nervous system, kidneys.

**Dimethyl-
dichlorosilane**

No toxic effect noted in mice due to inhalation. Toxic effect not yet reviewed for oral or intraperitoneal pathways in mice or rats.

**Dichloromethyl-
phenolsilane**

No toxic effect noted for inhalation or intraperitoneal pathways in mice or rats.

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United Chemical Technology
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Methyl-trichlorosilane	No toxic effect noted in mice due to inhalation. Toxic effect not yet reviewed for oral or intraperitoneal pathways in mice or rats.
Silicon-tetrahydride (silane) ¹	Acute systemic toxicity by analogy with other metal hydrides
Sulfuric acid	Marked irritation to eyes, nose, throat, skin, bronchi, and dental erosion. Cumulative lung damage. Chronic toxicity occurs to organs in systems other than nervous, respiratory, hematologic, and/or reproductive. Symptoms: Eyes, nose and throat irritant, pulmonary edema, bronchitis, emphysema, conjunctivitis, stomatis, ental erosion, tracheobronchitis, burning of eyes and skin, dermatitis. Target organs: Respiratory system, skin, eyes.
Trichloroethylsilane ¹	No toxic effect noted in mice due to inhalation. Toxic effect not yet reviewed in intraperitoneal or oral pathways in mice or rats.
Trichlorophenolsilane ¹	No toxic effect noted in inhalation, intravenous, or oral pathways in mice or rats.
Triethoxysilane ¹	No toxic effect noted in inhalation or intravenous pathways in mice or rats.
Trimethyl-chlorosilane ¹	No toxic effects noted in inhalation in mice. Immunological including allergic in intraperitoneal pathway in mice.

¹ Silane combined with water forms hydrochloric acid

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REFERENCES

1. NIOSH Pocket Guide to Chemical Hazards
2. NIOSH Registry of Toxic Effects of Chemical Substances 1985 - 1986
3. Patty's Industrial Hygiene and Toxicology, vol. 3A 2nd Edition